

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Wittich Kaule et al.	Confirmation No:	2401
Serial No:	10/599,659	Group:	Not Yet Assigned
Filed:	October 4, 2006	Examiner:	Not Yet Assigned
For:	Device and method for producing resist profiled elements		
Customer No.:	29127		
Attorney Docket No.	0055.0013US1 (P-00060-WO/US)		

### INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Information Disclosure Statement is submitted:

- ☐ under 37 CFR 1.129(a), or  
(First/Second submission after Final Rejection)
- ☒ under 37 CFR 1.97(b), or  
(Within any one of the following time periods: three months of filing national application (other than a CPA) or date of entry of the national stage in an international application; or before the mailing date of a first office action on the merits in a non-provisional application, including a CPA, or a Request for Continued Examination).
- ☐ under 37 CFR 1.97(c) together with either:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, or
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(After the 37 CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, and
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(Filed after final action or notice of allowance, whichever occurs first, but on or before payment of the issue fee)
- ☐ under 37 CFR 1.97(i):  
Applicant requests that the IDS and cited reference(s) be placed in the application filewrapper.  
(Filed after payment of issue fee)

Statement Under 37 CFR 1.97(e)

- ☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement; or
- ☐ No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Statement Under 37 CFR 1.704(d) (Patent Term Adjustment)

Applies to original applications (other than design) filed on or after May 29, 2000

- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.

☒ Enclosed herewith is form PTO-1449:

☒ Copies of the cited references are enclosed except US patent references.

☐ References cited were entered in prior application, U.S. Application No. \_\_\_\_\_, to which priority under 35 U.S.C. 120 is claimed. [The earlier application contains copies of the cited references.]

☐ The listed references were cited in the enclosed International Search Report in a counterpart foreign application.

☒ The "concise explanation" requirement (non-English references) for reference(s) [ ] under 37 CFR 1.98(a)(3) is satisfied by:

☐ the explanation provided on the attached sheet.

☒ the explanation provided in the Specification.

☒ submission of the enclosed International Search Report.

☐ submission of the enclosed English-language version of a foreign Search Report and/or foreign Office Action.

☒ the enclosed English language abstract.

☒ the enclosed English language counterpart.

☐ Applicant requests that the following non-published pending applications be considered:  
Examiner's Initials

\_\_\_\_\_ U.S. Patent Application No. [ ], by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_\_ U.S. Patent Application No. [ ], by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_ U.S. Patent Application No. [ ], by [inventor(s)], filed [ ], Docket No.: [ ]

Examiner

Date

- ☐ A copy of each above-cited application, including the current claims, is enclosed.
- ☐ A copy of each above-cited application, including the current claims, is enclosed, except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed.

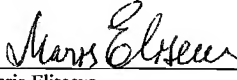
The Examiner is requested to return a copy of the above list of pending applications indicating which references were considered with the next office communication.

It is requested that the information disclosed herein be made of record in this application.

Method of payment:

- ☐ A check for the fee noted above is enclosed, or the fee has been included in the check with the accompanying Reply. A copy of this Statement is enclosed.
- ☐ Please charge Deposit Account 502 233 in the amount of \$[ ]. A copy of this Statement is enclosed.
- ☐ Please charge any deficiency in fees and credit any overpayment to Deposit Account 502 233.
- ☒ No fee is required.

Respectfully submitted,  
Houston Eliseeva LLP

By   
Maria Eliseeva  
Registration No. 43,328

4 Militia Drive, Ste. 4  
Lexington, MA 02421  
Telephone: 781-863-9991  
Facsimile: 781-863-9931

Dated: October 5, 2006

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**Complete if Known**

*(Use as many sheets as necessary)*

Sheet	1	of	2
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Application Number	10/599,659
Filing Date	October 4, 2006
First Named Inventor	Wittich Kaule et al.
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	0055.0013US1 (P-00060)

[illegible]

Examiner Initials*	Cite No.	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	1 <sup>a</sup>
		Country Code <sup>1</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (# known)	MM-DD-YYYY			
		DE4113027.8 A1	10/22/1992	Schneider Eckart		
		EP0648343	04/19/1995	Ernst-Bernhard Kley		

Examiner  
Signature

**Date**  
**Considered**

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \*Applicant's unique citation designation number (optional). \*\*See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPPEP 901.04. \*\*\*Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). \*For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. \*Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. \*Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet

2

of

2

**Complete if Known**

Application Number	10/599,659
Filing Date	October 4, 2006
First Named Inventor	Wittich Kaule et al.
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	0055.0013US1 (P-00060)

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		KLEY, E. et al. E-Beam lithography: a suitable technology for fabrication of high-accuracy... Proceedings of the SPIE, 10/23/1995, p.71-80, v.2640, SPIE, Bellingham, VA, US.	
		SCHNABEL, B. et al. Fabrication and application of subwavelength gratings. Proceedings of the SPIE, 2/10/1997, p.233-41, v.3008, SPIE, Bellingham, VA, US.	
		HEIDENRICH, R. et al. Electron scattering and line profiles in negative electron resists. Journal of Vacuum Science and Technology, 11/1976, p.1284-88, v.12, n.6, AVS, NY, US.	
		LIN, L. Cross-section profiles of single-scan negative electron-resist lines. Journal of Vacuum Science and Technology, 11/1976, p.1289-93, v.12, n.6, AVS, NY, US.	
		JAGDHOLD, U. et al. 60nm copper lines produced by a lift-off technique with 5keV electrons... Proceedings of the SPIE, 1997, p.757-64, v.3049, SPIE, Bellingham, VA, US.	
		HAM, Y. et al. Application of a new empirical model to the electron beam lithography... Japanese Journal of Applied Physics, 12/1998, p.6761-66, v.37, n.12B, JSAP, Tokyo, JP.	
		WITTIG, L. et al. Intermittence effect in electron beam writing. Microelectronic Engineering, 9/2001, p.321-6, v.57-58, Elsevier Publishers, Amsterdam, NL.	

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO:** Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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# INTERNATIONAL SEARCH REPORT

National Application No.  
PCT/EP2005/051451

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> G03F7/20      H01J37/317      G11B11/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) G11B H01J G03F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, INSPEC, IBM-TDB, WPI Data, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KLEY E-B ET AL: "E-BEAM LITHOGRAPHY: A SUITABLE TECHNOLOGY FOR FABRICATION OF HIGH-ACCURACY 2D AND 3D SURFACE PROFILES" PROCEEDINGS OF THE SPIE, SPIE, BELLINGHAM, VA, US, vol. 2640, 23 October 1995 (1995-10-23), pages 71-80, XP009031977 ISSN: 0277-786X the whole document -----	1-30
A	SCHNABEL B ET AL: "FABRICATION AND APPLICATION OF SUBWAVELENGTH GRATINGS" PROCEEDINGS OF THE SPIE, SPIE, BELLINGHAM, VA, US, vol. 3008, 10 February 1997 (1997-02-10), pages 233-241, XP009031976 ISSN: 0277-786X ----- <div style="text-align: center;">-/--</div>	1
<div style="display: flex; justify-content: space-between;"> <span><input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.</span> <span><input type="checkbox"/> Patent family members are listed in annex.</span> </div>		
<div style="display: flex;"> <div style="flex: 1;"> <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="flex: 1;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"Z" document: member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search  <div style="text-align: center;">3 April 2006</div>		Date of mailing of the international search report  <div style="text-align: center;">03/05/2006</div>
Name and mailing address of the ISA European Patent Office, P.B. 5018 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  <div style="text-align: center;">Haenisch, U</div>

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2005/051451

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HEIDENREICH R D ET AL: "Electron scattering and line profiles in negative electron resists" JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY USA, vol. 12, no. 6, November 1976 (1976-11), pages 1284-1288, XP002375481 ISSN: 0022-5355	
A	LIN L H: "Cross-section profiles of single-scan negative electron-resist lines" JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY USA, vol. 12, no. 6, November 1976 (1976-11), pages 1289-1293, XP002375482 ISSN: 0022-5355	
X	JAGDHOLD U ET AL: "60 nm copper lines produced by a lift-off technique with 5 keV electrons: experiment and simulation" PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING SPIE-INT. SOC. OPT. ENG USA, vol. 3049, 1997, pages 757-764, XP002375483 ISSN: 0277-786X the whole document	1,2,5-8, 12-14, 21,24
A	HAM Y-M ET AL: "APPLICATION OF A NEW EMPIRICAL MODEL TO THE ELECTRON BEAM LITHOGRAPHY PROCESS WITH CHEMICALLY AMPLIFIED RESIST" JAPANESE JOURNAL OF APPLIED PHYSICS, JAPAN SOCIETY OF APPLIED PHYSICS, TOKYO, JP, vol. 37, no. 12B, December 1998 (1998-12), pages 6761-6766, XP000880252 ISSN: 0021-4922	
A	WITTIG L-CHR ET AL: "Intermittence effect in electron beam writing" MICROELECTRONIC ENGINEERING, ELSEVIER PUBLISHERS BV., AMSTERDAM, NL, vol. 57-58, September 2001 (2001-09), pages 321-326, XP004302280 ISSN: 0167-9317	